

REMARKS

Applicants have amended the specification to correct the objection thereto, and has amended Claim 14 to clarify the present invention.

Applicants' amended Claim 14 is to a semiconductor device that has a semiconductor chip and a tape for mounting the semiconductor chip thereto, with an adhesive resin layer interposed between the semiconductor chip and the tape. Solder balls are arranged on the tape, and there are no vapor escape holes formed in the tape, which is of a material having a high water permeability of $10 \text{ g/m}^2 \cdot 24\text{H}$ or more, which is sufficient to prevent cracking and bulging of the semiconductor device which might occur when the solder balls are reflowed after the semiconductor device absorbs moisture. Such a semiconductor device is not taught or suggested in the prior art.

Reconsideration and removal of the rejection of Claim 14 under 35 U.S.C. §102(e) as anticipated by, or as obvious under 35 U.S.C. §103(a), in view of the teachings of Wilson (U.S. 5,612,576) are respectfully requested in view of the present amendment to Claim 14 and the following remarks.

In the Office Action, it is alleged that Wilson shows a semiconductor device that has a chip (22), a tape (12) and an adhesive (24), where the tape is made of a material having an inherent high water permeability due to the presence of through holes or vent holes (16).

While Applicants mention in the present specification that the present tape has a similar effect as use of through holes (at page 14, lines 14-19), this is a disclosure in the present application and is not taught or suggested in Wilson. In the present semiconductor device, water permeability is effected throughout a substantial portion of the tape material and water permeability is not limited to that which passes through through holes in the tape.

In order to emphasize this distinction, Applicants have amended Claim 14 to provide that the tape has no vapor escape holes formed therein, which is completely distinct from the Wilson teachings. The Wilson reference clearly requires the presence of vent holes (16) and specific vent hole sealing caps 20 in order to prevent popcorning during solder reflow.

In view of the aforementioned amendment and above remarks, claim 14, as amended, is now believed to be in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

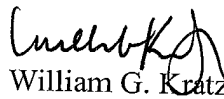
Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

09/836,182

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully Submitted,

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PATENT TRADEMARK OFFICE

Enclosures: Version with markings to show changes made

HA\HOME\NANCY\98\980931B Amendment

VERSION WITH MARKINGS TO SHOW CHANGES MADE 09/836,182

IN THE SPECIFICATION:

Please amend the paragraph beginning at line 11 on page 15, to read as follows:

Sample No. 5 is the TAB tape 14 made of [Capton] Kapton Type 200EN from Toray•Dupont Corporation. The water permeability of sample No. 5 is 14.5, which is 10 times as high as that of the comparative sample 2. Same No. 6 in Table 3 below is the TAB tape 14 using [Capton] Kapton Type 200V. This material has water permeability of 37.3 (25 times as high as that of the comparative sample).

IN THE CLAIMS:

Amend claim 14 as follows:

14. (Thrice Amended) A semiconductor device comprising a semiconductor chip, a tape for mounting said semiconductor chip thereto, an adhesive resin layer interposed between said semiconductor chip and said tape, and solder balls arranged on said tape, characterized in that said tape has no vapor escape holes formed therein, and is of a material having high water permeability of $10 \text{ g/m}^2 \cdot 24\text{H}$ or more, sufficient to prevent cracking and bulging of said semiconductor device which might occur when the solder balls are reflowed after said semiconductor device absorbs moisture.